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Consumption and Nutritive Values of Traditional Mon Food

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Introduction²

Traditional foods, consumed by people over a long period of time, play an important role in establishing local identity, culture, and custom, and they transfer cultural heritage from generation to generation (Albayrak & Gunes, 2010; Inamdar, Chimmad, & Naik, 2005). During the past two decades, several researchers have claimed that traditional foods are healthier products and good sources of micronutrients. However, such statements have been poorly described in scientific literature (Albayrak & Gunes, 2010; Inamdar et al., 2005; Kuhnlein, 2003; Salehi, Kuhnlein, Shahbazi, & Kimiagar, 2005). This paper is based on an exploration in an ethnic minority village of Mon people in Thailand. It aims to identify traditional Mon food, describe its nutritive values, and illuminate selected aspects of food consumption behaviour.

Indigenous peoples who live in remote areas mostly rely on traditional foods that are collected from the local surrounding environment (Azar & Aminpour, 1996). The Mon are considered to be one of the earliest peoples in mainland South-East Asia. They were already exposed to Theravada Buddhism more than thousand years before the arrival of the Thai and Burmese in the area, and their language was influential on other languages in the region. More recent migration movements to Thailand appeared

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in the years following 1948, after the civil war and the subsequent installation of military dictatorship in Myanmar. Even though the Mon in Thailand have been integrated into an economic market system and have adopted many aspects of Thai mainstream society, preparation and consumption of traditional food is a practice that can help to perpetuate Mon identity. In the following, this paper presents the study context, introduces 10 traditional Mon dishes, and discusses the nutritive values of the food.

Research Methodology

The following research was carried out in Ban Dong Sak, Sangkhlaburi district, Kan-
chanaburi province, Thailand. The research protocol was approved by the ethical
committee of the Faculty of Medicine, Thammasat University. The research proce-
dure was divided into three main phases. During the first phase, a food survey was
conducted and checklists disseminated among 50 households in Ban Dong Sak to
identify common foods in everyday consumption. The results of the survey pointed
out 79 kinds of food, which were then categorised into eight groups: curry soups (38
recipes), soups (18 recipes), stir-fried food (8 recipes), deep-fried food (7 recipes), chilli
pastes (5 recipes), salads (2 recipes), and grilled food (1 recipe). The 10 most frequently
consumed foods were purposively selected as representative samples in the study of
nutritive values of traditional Mon food.

The second phase of the research dealt with a discussion of traditional Mon food
and its ingredients, cooking methods, and consumption. In this phase, 10 house-
wives, who normally did the cooking for the households, were invited to participate
in a focus group discussion. During the process of discussion, the 10 recipes selected
in the survey were presented and the cooks agreed to use these as representative for
traditional Mon food as all of these dishes (1) were cooked and consumed in Myan-
mar before they migrated to Thailand, (2) had been consumed for many generations,
and (3) were still regularly prepared. The food ingredients and the process of cooking
were then recorded to present the standard recipes for this research.

The third phase consisted of cooking demonstrations as one housewife from the
focus group consented to do a cooking demonstration of all 10 representative reci-
pes. Following the standardised recipes from the focus group discussion, most ingre-

dients were collected from the forest near the village while only a few were bought from the local market. All ingredients were weighted in raw condition by digital scales before starting to cook. In the case of nutritive value, all data in grams were computed by using the INMUCAL programme which was developed by the Institute of Nutrition, Mahidol University, and measures calories, protein, fat, carbohydrate, fibre, calcium, phosphorus, iron, vitamin A, vitamin B1, vitamin B2, niacin, and vitamin C.

Food Consumption Behaviour

The objective of this part is to explain the food patterns of Mon ethnicity in Ban Dong Sak. Generally, the Mon in this village consume two meals a day. In case of agriculturists or workforces breakfast is taken between 6 and 7 am before work. The elderly or persons who work at home consume breakfast around 10 or 11 am. The other meal is dinner which is normally eaten around 5 or 6 pm. In between these two meals the consumption of small snacks or salad often occurs. At the time of this research, it was only Papaya salad (including raw Papaya, shrimp paste, salt, dry shrimp, peanuts, fresh chilli, and fermented marian plum), which was consumed this way. This meal is always consumed in a group and more people meet to prepare and eat together.

Rice is the staple food which is served to each person on a separate plate. Apart of this, two or three side dishes are served on plates in the middle of the group where everyone can take whatever they want. Traditionally, the Mon ate their food by using their hands. Due to social interaction with members of modernised Thai society, this behaviour in food consumption changed and some of the younger generation now prefer to eat with spoons and forks.³

The consumption of fruits or desserts after the main dish is very rare. As a general characteristic it was found that a sour taste, combined with a spicy and a salty flavour is much preferred in Mon cuisine. The use of oil and sugar as ingredients for food plays only a marginal role. The sour taste comes from tamarind, fermented marian plum, lemon, rosella leaves, or acacia concinna leaves. The salty flavour is from salt and shrimp paste. Fish sauce, which is a popular ingredient in Thai dishes, is not

³ Traditionally, though, Thais also ate their food using hands.

used in Mon cuisine. Just as in Thai cuisine, a few ingredients are used to increase the taste of their dishes. For example, Mono Sodium Glutamate (MSG) is added to almost every kind of dish.

Culinary interaction also enters in Mon society, and nowadays mobile food vendors from outside the Mon community offer their goods too, for example, ice-cream, fish balls, and sausages. Additionally, Mon can easily buy Thai or Western (junk) food in the nearby convenience stores. For economic reasons, in order to gain supplementary income, some Mon opened small shops in their houses and sell industrially produced small snacks and candies for children. Some women also sell home-made snacks or foods in front of their houses. Mostly, dishes are given in the style of 'take-away', but some of them also offer places to sit and eat. At this point it is obvious that food patterns of the Mon are changing and that in addition to home-made and self-produced ingredients industrially produced foods are consumed too. Consequently, change in the living environment also leads to change in consumption behaviour and patterns.

Traditional Mon Foods

10 representative cooking recipes and the methods used to prepare traditional Mon food are explained below. The details of recipes and ingredients are presented in Table 1.

1. **Roselle Soup (*Kang Krajeab*):** Boil the water in a small pot. Add clean roselle leaves and stir until the soup becomes glutinous. Add shrimp paste and salt as needed.
2. **Fish Curry (*Kang Pla*):** For this curry, pound galangal, garlic, shallots, fermented marian plum, fresh chilli, salt, and shrimp paste in the mortar until it is smooth. Marinate the fresh fish with the curry paste in the pot by hand. Heat it up and add water to cover the fish. Sprinkle a pinch of curcuma powder over the dish to decrease the smell of the fish. Before serving, sprinkle with fresh sliced parsley leaves to increase the taste and aroma.
3. **Dried Shrimp Paste (*Naam Prik Kung Haeng*):** Grill fresh chilli, garlic, and shallots and mix them with salt in the mortar. Add dried shrimp and pound it until it attains a smooth consistence. Add lemon juice to increase the taste and aroma. Serve with egg plant, okra, and cucumber as side dishes.
4. **Acacia Concinna Curry (*Kang Som Poi*):** Boil water and add shrimp paste as well as salt. Add pieces of grilled barb fish. Add clean acacia concinna leaves. Wait until it is cooked.

5. **Hunglei Curry (*Kang Hunglei*):** For this curry, ground galangal, garlic, shallots, dried chilli, salt, shrimp paste, and curcuma powder in a mortar until smooth. Heat a pan, put some oil in it, and fry the curry paste with some dark soy sauce. Add the meat which can be pork, chicken, or beef, and fry it with the soy sauce and the curry paste. Add some water, cover the pan, and steam the dish until the meat is tender. Finally, ground and sprinkle dried coriander seeds over the dish to increase the aroma.
6. **Dillenia Indica Curry (*Kang Look San*):** Boil water in a small pot and add sliced garlic. Slice the dillenia indica into small pieces and put them into the boiling water. Add shrimp paste, salt, and monosodium glutamate to increase the taste.
7. **Wax Gourd Curry (*Kang Fag Kheao*):** Grind chilli, garlic, shallots, salt, shrimp paste, and curcuma powder in the mortar until smooth. Heat the pan, add some oil, and fry with

Table 1: List of Ingredients in the Selected Recipes

FOOD ITEM	MAJOR INGREDIENTS (IN PERCENT)
<i>Roselle Soup</i>	Fresh chilli (3.6) roselle leave (81.1) shrimp paste (8.1) salt (5.4) MSG (1.8)
<i>Fish Curry</i>	Fresh fish (65.8) galangal (1.6) shallot (4.5) garlic (4.5) fresh chilli (4.5) salt (1.2) shrimp paste (4.1) fermented marian plum (9.1) curcuma powder (0.4) parsley leave (3.3) MSG (0.8)
<i>Dried Shrimp Paste</i>	Fresh chilli (9.7) shallot (38.7) garlic (12.9) shrimp paste (5.6) salt (2.4) lemon juice (19.4) dried shrimp (9.7) MSG (1.6)
<i>Acacia Concinna Curry</i>	Acacia concinna leave (35.8) shrimp paste (14.9) grilled fish (40.3) salt (6.0) MSG (3.0)
<i>Hunglei Curry</i>	Pork meat (74.1) oil (5.5) galangal (2.4) shallot (7.4) garlic (4.0) dried chilli (1.7) shrimp paste (0.9) salt (1.7) curcuma powder (0.2) dark soy sauce (1.2) coriander seed (0.5) MSG (0.3)
<i>Dillenia Indica Curry</i>	Dillenia indica (73.7) shallot (9.3) garlic (7.6) shrimp paste (3.4) salt (4.2) MSG (1.7)
<i>Wax Gourd Curry</i>	Wax gourd (48.3) chicken (36.2) fresh chilli (1.2) shallot (5.6) garlic (2.0) salt (1.0) shrimp paste (1.6) curcuma powder (0.2) oil (2.8) parsley leave (0.5) MSG (0.7)
<i>Lasia Spinosa Curry</i>	Lasia spinosa leave (29.9) fresh fish (43.9) shallot (9.0) garlic (4.5) shrimp paste (2.3) fermented marian plum (7.3) salt (1.1) fresh chilli (0.6) curcuma powder (0.3g) MSG (1.1)
<i>Monkey Apple Curry</i>	Monkey apple (52.3) fresh shrimp (32.1) shallot (7.8) garlic (3.2) shrimp paste (1.8) salt (2.3) MSG (0.5)
<i>Tomato Curry</i>	Tomato (57.9) dried mackerel (20.2) oil (6.2) shallot (6.5) garlic (3.4) salt (1.3) shrimp paste (2.6) dried chilli (1.3) curcuma powder (0.3) MSG (0.5)

Source: Author's Compilation

curry paste. Add chicken and continue to stir until it is cooked. Pour in some water and wait until it is boiling again. Put small cubes of wax gourds into the curry soup, add a bit more water until the food is covered, and wait until the chicken and wax gourds are tender. Before serving, sprinkle with fresh sliced parsley leaves to increase taste and aroma.

8. **Lasia Spinosa Curry (Kang Pak Nham):** Mix lasia spinosa leaves, garlic, shallots, fermented marian plum, salt, shrimp paste, galangal, and fresh fish together by hand. Squeeze it until the water from the lasia spinosa comes out. Boil water in a pot, add all ingredients, pour in some more water, and wait until it reheats. Before serving, add sliced fresh chilli as decoration and to increase the aroma and taste.
9. **Monkey Apple Curry (Kang Pud Sar):** Put slices of garlic and shallots into boiling water. Add shrimp paste and salt. After this, add mashed monkey apples and wait until the water is boiling again. Finally, add clean fresh shrimps and boil until it is done.
10. **Tomato Curry (Kang Ma Khuea Ted):** The curry paste of this dish consists of dried chilli, garlic, shallots, salt, shrimp paste, and curcuma powder. To prepare this dish, heat a pan, add some oil, and fry the curry paste. Next, add tomatoes and dried mackerel. Pour in a little bit of water and cook until done.

Nutritive Values of Mon Foods

The nutrient composition in 100g edible portions of the 10 recipes is shown in Table 2. *Kang hunglei* contains the highest number of calories (1050.45 Kcal/100g), followed by wax gourd curry (666.14 Kcal/100g), tomato curry (470.04 Kcal/100g), and fish curry (265.15 Kcal/100g), while roselle soup, which was the most frequently consumed, had least calories compared to other foods (32.59 Kcal/100g).

Total dietary fibre ranged from 0.20 to 7.09 g/100g and 7 out of 10 recipes possessed more than 2.0g/100g (Acacia concinna curry was the only dish in which such amount of fibre was not found as the main ingredient is only small leaves from Acacia concinna). The highest level was found in wax gourd curry, which contained a relatively high amount of dietary fibre, 7.1g/100g.

The highest protein and fat contents were found in *kang hunglei* (95.45g/100g and 62.74g/100g, respectively) as the main ingredients are pork and oil. This was followed by wax gourd curry (41.91g/100g of protein and 43.12g/100g of fat) due to the chicken and oil which are added. For the other foods, especially the vegetable soup and curry,

Table 2: Proximate Composition of 10 Recipes per 100g Edible Portion										
	<i>Kang Hunglei</i>	<i>Wax Gourd Curry</i>	<i>Tomato Curry</i>	<i>Fish Curry</i>	<i>Monkey Apple Curry</i>	<i>Lasia Spinosa Curry</i>	<i>Dried Shrimp Paste</i>	<i>Acacia Concinna Curry</i>	<i>Dillenia Indica Curry</i>	<i>Roselle Soup</i>
Energy (Kcal)	1050.45	666.14	470.04	265.15	184.42	140.98	120.60	82.93	33.57	32.59
Protein (g.)	95.45	41.91	32.80	28.90	14.42	15.42	10.65	9.37	1.40	1.22
Fat (g.)	62.74	43.12	25.81	7.34	1.89	3.64	0.73	2.07	0.06	0.12
CHO (g.)	25.67	26.88	23.38	14.08	26.19	7.87	17.08	3.66	6.31	6.14
Fiber (g)	3.31	7.09	4.42	2.50	5.07	2.31	3.19	0.00	0.69	0.20
MINERALS										
Ca (mg.)	133.66	216.96	234.63	79.24	188.53	96.66	146.57	170.13	62.88	67.24
P. (mg.)	1128.91	450.61	356.51	330.34	258.58	188.64	225.64	130.19	49.72	30.04
Fe (mg.)	8.28	4.77	5.23	2.03	3.05	2.12	2.66	2.62	1.22	0.97
VITAMINS										
A (IU)	69.43	24.59	117.36	46.94	2.28	15.21	8.57	0.00	11.75	31.30
B1 (mg.)	7.09	0.26	0.33	0.21	0.09	0.10	0.18	0.01	0.07	0.05
B2 (mg.)	0.38	0.40	0.15	0.17	0.83	0.16	0.11	0.04	0.09	0.12
Niacin (mg.)	23.76	12.24	10.00	5.81	3.23	3.35	2.21	1.64	0.96	2.24
C (mg.)	11.16	100.71	71.25	35.57	53.18	28.72	19.88	0.00	4.32	20.78
ENERGY DISTRIBUTION										
CHO	9.79	16.21	20.46	23.67	58.39	24.99	58.14	20.67	80.47	80.47
Protein	36.39	25.28	28.71	48.57	32.15	48.98	36.24	52.96	17.80	15.99
Fat	53.82	58.52	50.82	27.76	9.46	26.03	5.62	26.37	1.72	3.54

Source: Author's Analysis via INMUCAL

the nutritive value of the food was low in fat and energy levels, for example, dillenia indica curry (0.06g/100g of fat and 33.57 Kcal/100 g) and roselle soup (0.12g/100g of fat and 32.59 Kcal/100g). Carbohydrate showed a variation between 3.66g/100g and 26.88g/100g.

The highest carbohydrate value was found in wax gourd curry while the lowest was in acacia concinna curry.

Generally, traditional Mon foods are good sources of calcium and phosphorus, especially tomato curry (234.63 mg/100g of calcium and 356.51 mg/100 g of phosphorus) and *kang hunglei* (133.66 mg/100g of calcium and 1128.91 mg/100g of phosphorus). The reason for this is the shrimp paste, which plays a major role in Mon cuisine and thus presents an important ingredient for all recipes. Finally, the dishes contributed 9.79-80.47%, 15.99-52.96%, and 1.72-58.52% of the total food energy from carbohydrate, protein, and fat, respectively.

Conclusion

The majority of traditional Mon food in everyday life is based on curry and prepared by boiling. Generally, fried foods are very rare. The nutrition value of the dishes reveals a high variation in nutrient composition. Dishes with high content of calcium and phosphorus are also identified. There is some traditional food, which is identified as low in carbohydrate and fat, especially dishes which are based on vegetables. In order to increase the nutrient value of the dishes, fish or meat is recommended due to their valuable nutrient composition. The consumption of Mono Sodium Glutamate (MSG) is high as it is used in almost all dishes in Mon cuisine. Although MSG presents a flavour enhancer which is widely considered safe for human consumption, a reduction of daily intake may be of benefit. Studies convey that high consumption of MSG may lead to an increasing food desire, to overconsumption and, eventually, to gain in weight (He et al., 2008; Hermanussen et al., 2005; Hirata, Andrade, Vaskevicius, & Dolnikoff, 1997). According to informal observations and an interview with the vice-village headman of Ban Dong Sak, obesity in the Mon village is increasing and the high intakes of MSG were considered one of the reasons for that. Besides, hypertension and diabetes are also explained by increasing obesity.

The recommendations from the study are twofold. First, all relevant information concerning the nutritional composition of local foods, and especially information on the acceptable daily intake of MSG, should be provided and communicated to the villagers by local health institutions. Second, additional material concerning the negative impact of food consumption related to a 'Western' or a 'modern' lifestyle, especially in relation to junk food and fast food, should be provided to local schools in order to target the young generation. As the knowledge of the nutritional value of local food increases, both food preparation and consumption patterns might be preserved and improved.

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